

We Claim:

1. A method for encapsulating and decapsulating information into a data packet being transmitted through a plurality of switches comprising the steps of:

receiving a data packet in a first switch for transmission to a second switch;

encapsulating information into a field of said data packet so that said information, when encapsulated into said data packet, does not increase the size of said data packet;

transmitting said data packet having said information encapsulated in said data packet to said second switch;

receiving said data packet having said information encapsulated in said data packet in said second switch; and

decapsulating said information encapsulated in said data packet.

2. The method as recited in claim 1, wherein said step of encapsulating information into a field of said data packet further comprises the step of using an encode code book to encapsulate said information into a field of said data packet.

3. The method as recited in claim 1, wherein said step of encapsulating information into a field of said data packet further comprises the step of performing an XOR function wherein said data packet is XORed with said information.

4. The method as recited in claim 1, wherein said information is encapsulated into a Frame Check Sequence field of said data packet.

5. The method as recited in claim 4, wherein said step of encapsulating information into said Frame Check Sequence field of said data packet further comprises the step of performing an XOR function wherein said Frame Check Sequence field of said data packet is XORed with said information.

6. The method as recited in claim 1, wherein said step of decapsulating said information encapsulated in said data packet comprises the step of using a decoding code book to decapsulate said information encapsulated in said data packet.

7. The method as recited in claim 1, wherein said information encapsulated in said data packet is decapsulated from a Frame Check Sequence field of said data packet.

8. The method as recited in claim 7, further comprising the step of performing a Cyclic Redundancy Check on said data packet to determine if there was an error in transmitting said data packet.

9. The method as recited in claim 1, further comprising the step of determining if an error occurred in the transmission of said data packet.

10. The method as recited in claim 1, further comprising the step of determining an error occurred in the transmission of said data packet if said information encapsulated in said data packet cannot be determined.

11. The method as recited in claim 1, further comprising the step of determining an error occurred in the transmission of said data packet if said information encapsulated in said data packet cannot be identified in a decode code book.

12. A system for encapsulating and decapsulating information into a data packet being transmitted through a plurality of switches comprising:

a first switch comprising:

a transmitter; and

an encapsulating module that encapsulates information into a field of a data packet so that said information, when encapsulated into said data packet, does not increase the size of said data packet; and

a second switch comprising:

a receiver, wherein when said transmitter of said first switch transmits said data packet having said information encapsulated in said data packet to said receiver of said second switch, wherein said receiver of said second switch receives said data packet having said information encapsulated in said data packet; and

a decapsulating module that decapsulates said information encapsulated in said data packet to determine said information encapsulated in said data packet.

13. The system as recited in claim 12, wherein said encapsulating module uses an encode code book to encapsulate said information into a field of said data packet.

14. The system as recited in claim 12, wherein said encapsulating module encapsulates said information into a field of said data packet by performing an XOR function wherein said data packet is XORed with said information.

15. The system as recited in claim 12, wherein said encapsulating module encapsulates said information into a Frame Check Sequence field of said data packet.

16. The system as recited in claim 12, wherein said encapsulating module encapsulates information into a Frame Check Sequence field of said data packet by performing an XOR function on said Frame Check Sequence of said data packet and said information, wherein said Frame Check Sequence field of said data packet is XORed with said information.

17. The system as recited in claim 12, wherein said decapsulating module decapsulates said information encapsulated in said data packet using a decoding code book to decapsulate said information encapsulated in said data packet.

18. The system as recited in claim 12, wherein said decapsulating module decapsulates said information encapsulated in said data packet from a Frame Check Sequence field of said data packet.

19. The system as recited in claim 18, wherein said decapsulating module performs a Cyclic Redundancy Check on said data packet to determine if there was an error in transmitting said data packet.

20. The system as recited in claim 12, wherein said decapsulating module determines if an error occurred in the transmission of said data packet.

21. The system as recited in claim 12, wherein said decapsulating module determines that an error occurred in the transmission of said data packet if said information encapsulated in said data packet cannot be determined.

22. The system as recited in claim 12, wherein said decapsulating module determines an error occurred in the transmission of said data packet if said information encapsulated in said data packet cannot be identified in a decode code book.

23. A switch for encapsulating and decapsulating information into a data packet, the switch comprising:

a transmitter that transmits data packets;

an encapsulating module that encapsulates information into a data packet before said transmitter transmits said data packet;

a receiver for receiving transmitted data packets; and

a decapsulating module that decapsulates information from said transmitted data packets received by said receiver.

24. The switch as recited in claim 23, wherein said encapsulating module has an encode code book to encapsulate said information into a field of said data packet.

25. The switch as recited in claim 23, wherein said encapsulating module has an XOR function wherein said data packet is XORed with said information.

26. The switch as recited in claim 23, wherein said encapsulating module encapsulates said information into a Frame Check Sequence field of said data packet.

27. The switch as recited in claim 23, wherein said encapsulating module has an XOR function and encapsulates information into a Frame Check Sequence field of said data packet using said XOR function on said Frame Check Sequence of said data packet and said information, wherein said Frame Check Sequence field of said data packet is XORed with said information.

28. The switch as recited in claim 23, wherein said decapsulating module has a decoding code book, wherein said decapsulating module decapsulates information

encapsulated in said data packet using said decoding code book to decapsulate said information encapsulated in said data packet.

29. The switch as recited in claim 23, wherein said decapsulating module decapsulates said information encapsulated in said data packet from a Frame Check Sequence field of said data packet.

30. The switch as recited in claim 29, wherein said decapsulating module has a Cyclic Redundancy Check, wherein said Cyclic Redundancy Check performs an error check on said data packet.

31. The switch as recited in claim 23, wherein said decapsulating module has an error detector that determines if an error occurred in the transmission of said data packet.

32. The switch as recited in claim 23, wherein said decapsulating module determines that an error occurred in the transmission of said data packet if said information encapsulated in said data packet cannot be determined.

33. The system as recited in claim 23, wherein said decapsulating module has a decode code book, wherein said decapsulating module determines an error occurred in the transmission of said data packet if said information encapsulated in said data packet cannot be identified in said decode code book.